PROJECT SUMMARY SHEET

PROJECT TITLE NAME: Kingsbury County Lakes Assessment Project
NAME AND ADDRESS OF LEAD PROJECT SPONSOR:

Kingsbury County Conservation District
P.O. Box 85
De Smet, SD 57231
Ph. - (605) 854-3183
Fax - (605) 865-3471

STATE CONTACT PERSON: William C. Stewart TITLE: Environmental Senior Scientist

PHONE: (605) 773-4254 FAX: (605) 773-4068

STATE: South Dakota WATERSHED: Vermillion River Basin HUC # 10170103

PROJECT TYPES : [] BASE [x] WATERSHED [] GROUNDWATER [] I&E

WATERBODY TYPES
[ ] Groundwater
[x] Lakes/Reservoirs
[ ] Rivers
[x] Streams
[ ] Wetlands
[ ] Other

NPS CATEGORY
[x] Agriculture
[ ] Urban Runoff
[ ] Silviculture
[ ] Construction
[ ] Resource Extraction
[ ] Stowage and Land Disposal
[ ] Hydrologic Modification
[ ] Other

PROJECT AREA LATITUDE 44 17 09 N LONGITUDE 97 28 17 W

SUMMARIZATION OF MAJOR GOALS:

The long term goal of the Kingsbury County Assessment Project is to locate and document sources of nonpoint source pollution in three watersheds and produce feasible restoration recommendations. Information generated from this study will provide adequate background information needed to drive watershed implementation projects to reduce sedimentation and nutrient enrichment within creeks and lakes in three watersheds. This project will result in TMDL reports for Lakes Preston, Thompson and Whitewood.

PROJECT DESCRIPTION:

Lakes Preston, Thompson and Whitewood are natural prairie pothole lake basins whose watersheds drain portions of Kingsbury County in South Dakota. Outlets of these lake basins contribute water to the Vermillion River. Lakes Thompson, Preston and Whitewood experience heavy recreational use and heavy shoreline development. All receive contributions of agricultural runoff from upstream land uses. Inlet creeks receive runoff from agricultural operations while outlet creeks receive water from upstream lake basins and adjacent agricultural operations. The Thompson, Preston and Whitewood project area has a total drainage of approximately 263,044 acres. Cropland and grazing are the predominant land uses. This project is intended to be the initial phase of a multi-basin restoration project. Results of this effort will be used to identify sources of impairment to three lake basins and define feasible recommendations for watershed restoration.

FY01 319 funds requested $ 250,480.00 Match $ 166,763.00
Other Federal Funds $ 0.00 Total Project Cost $ 417,243.00
FTE's Funded by 319 2.5

2.0 STATEMENT OF NEED

2.1 The purpose of this Pre-Implementation Assessment is to determine the sources of impairments to Lakes Preston, Thompson and Whitewood in Kingsbury County, South Dakota, and the tributaries in their watersheds. The watershed ultimately drains to the Vermillion River. Creeks and small tributaries contribute loadings of sediment and nutrients related to snowmelt or rainfall events.

2.2 Watersheds for these three lake basins fall within the Vermillion watershed and include three lake basins that are listed on the State 303(d) list. These basins include Lakes Thompson, Preston and Whitewood. Lakes Thompson and Whitewood have been assigned the beneficial uses of warmwater permanent fish life propagation, immersion contact recreation, limited contact recreation and wildlife propagation and stock watering. Streams in the watershed drain predominantly agricultural lands with both cropland and grazing acres. Winter feeding areas for livestock are present in the watershed. The streams carry sediment loads and nutrient loads, which degrade both stream and lake water quality, leading to eutrophication.

Lakes Thompson, Preston and Whitewood fall within one watershed with a total surface area of approximately 263,044 acres. The Lake Thompson drainage encompasses this entire area. Lakes Preston and Whitewood fall upstream of Thompson with watershed areas of approximately 58,687 acres and 106,134 acres, respectively. Larger cities within the project area include De Smet (popn - 1180), Arlington (popn - 913) and Lake Preston (popn - 623).

2.3 See map in Figure 1.

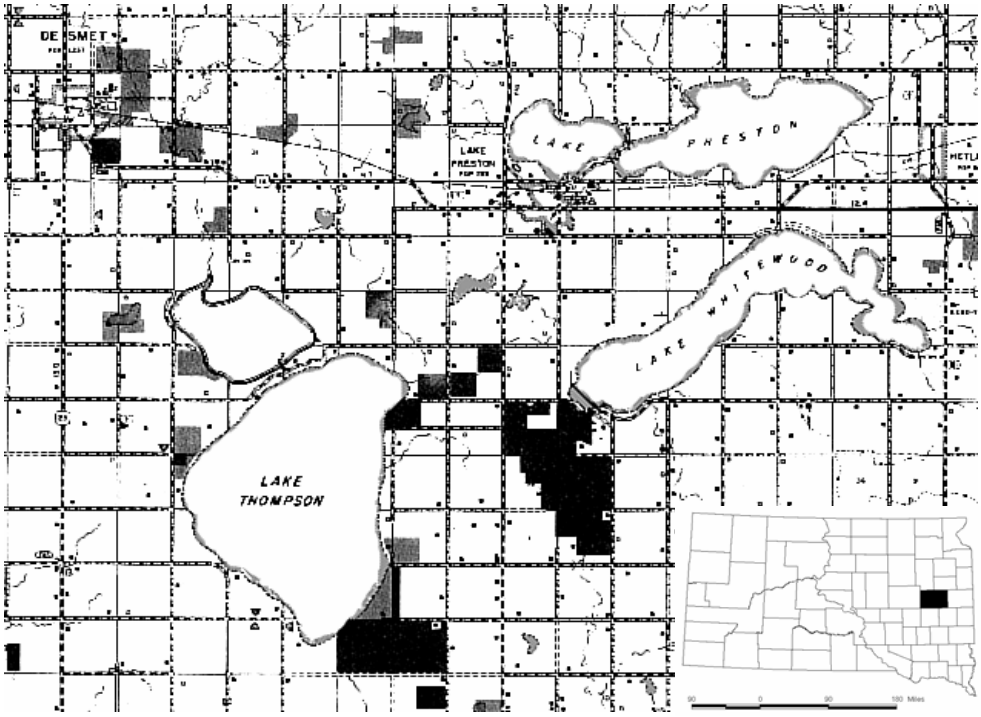


Figure 1. Location of Kingsbury County Lakes Assessment project.

2.4 Land use in the watershed is primarily agricultural cropland and grazing. Small grains, corn and soybeans are the main crops on cultivated lands while areas with rolling terrain are used for grazing. Some winter animal feeding areas are located in the watershed.

Major soil associations found in the watershed include Poinsett-Waubay-Buse, Poinsett-Hetland, Renshaw-Sioux-Marysland, Clarno-Ethan-Bonilla and Vienna-Brookings-Egeland-Embden.

The Kingsbury Lake Assessment Project area fall within a Humid Continental Type B climate. Average annual precipitation is 24 inches per year and average seasonal snowfall is 38 inches per year. Most precipitation falls during the period April to September. Tornadoes and severe thunderstorms strike occasionally. These storms are local and of short duration and occasionally produce heavy rain fall events.

The project area falls within the Northern Glaciated Plains ecoregion. This glaciated landscape consists of rolling terrain above drift plains. There is a high density of prairie pothole wetlands and a poor drainage network. Elevations range from approximately 1500 to 2000 feet with local relief ranging from 50 to 150 feet. Potential natural vegetation consists of tall grass prairie species.

2.5 The purpose of this assessment is to identify critical areas for nonpoint source restoration efforts for Lakes Thompson, Preston and Whitewood. Results of this effort will serve as the foundation for a Section 319 implementation project.

3.0 PROJECT DESCRIPTION

3.1 GOALS

The goal of this assessment project is to determine and document sources of impairments to Lakes Thompson, Preston and Whitewood and to develop feasible best management recommendations and develop TMDLs for restoration.

3.2 OBJECTIVES AND TASKS

OBJECTIVE 1: The objective of this task is to determine current conditions in Lakes Thompson, Preston and Whitewood and calculate the trophic state of each lake. This information will be used to determine the total amount of nutrient loading that is occurring in each of the lakes and the amount of nutrient reduction required to improve trophic condition.

Task 1. Nutrient and solids parameters will be sampled monthly at three in-lake sites within each basin and one Lake Henry site over the period April 1 to October 1, 2001 and 2002. Nutrient samples will be analyzed by the South Dakota State University Water Quality Testing Laboratory and solids samples will be analyzed by the South Dakota State University Environmental Biology Laboratory. Samples will be collected from the surface and bottom of lakes Thompson, Preston and Whitewood and from the surface of Lake Henry. The total number of samples collected will be 72 for lakes Thompson, Preston and Whitewood and 12 for Lake Henry. Resulting data will be combined with tributary data for inclusion in the USACE BATHTUB basin eutrophication model.

Task 2. The purpose of in-lake sampling is to assess ambient nutrient concentrations in the lake and identify trophic status. Water column dissolved oxygen and temperature profiles will be collected on a monthly basis. Water samples will be collected with a Van Dorn sampler, preserved, packed on ice and shipped to the lab by the most rapid means available. Fecal coliform samples will be analyzed by the South Dakota Department of Health Lab in Pierre, SD. Planktonic algae will be collected by taking vertical tows with a Wisconsin Plankton net from each basin location. Benthic invertebrates will be

collected using an Eckman dredge from each basin location. Chlorophyll, plankton and benthic invertebrate sample processing will be conducted within the South Dakota State University Environmental Biology Laboratory. Shoreline and macrophyte surveys will be conducted adjacent to each sampled tributary inlet location.

Task 3. All samples will be collected using methods described in the Standard Operating Procedures for Field Samplers by the State of South Dakota Water Resources Assistance Program. Figure 2 provides a map of proposed lake sampling sites.

Inlake Sites

NAME	LATITUDE	LONGITUDE
LT-1	44.2356461	-97.4393260
LT-2	44.2644249	-97.4494011
LT-3	44.2913015	-97.4648267
LH-1	44.3247292	-97.4805618
LW-1	44.3194507	-97.3435155
LW-2	44.3492286	-97.2928524
LW-3	44.3311226	-97.2553163
LP-1	44.3786384	-97.3772543
LP-2	44.3765496	-97.3149373
LP-3	44.3869884	-97.2763557

Trbutary Sites

NAME	LATITUDE	LONGITUDE
LTT-4	44.1990295	-97.4320501
LTT-3	44.2933649	-97.4058510
LWT-5	44.3249828	-97.3889762
LTT-2	44.3249315	-97.4232514
LWT-2	44.3249159	-97.2989581
LWT-1	44.2965975	-97.3303954
LWT-3	44.3116557	-97.2291665
LWT-4	44.3285019	-97.2294164
LPT-1	44.3711229	-97.2502595
LPT-2	44.3990002	-97.2451189
LPT-3	44.4004553	-97.2692315
LPT-4	44.3995494	-97.3367353
LPT-5	44.3980482	-97.3607888
LPT-6	44.3807486	-97.3917430
LWT-6	44.2668612	-97.3641300
LT0-1	44.3168836	-97.4685435

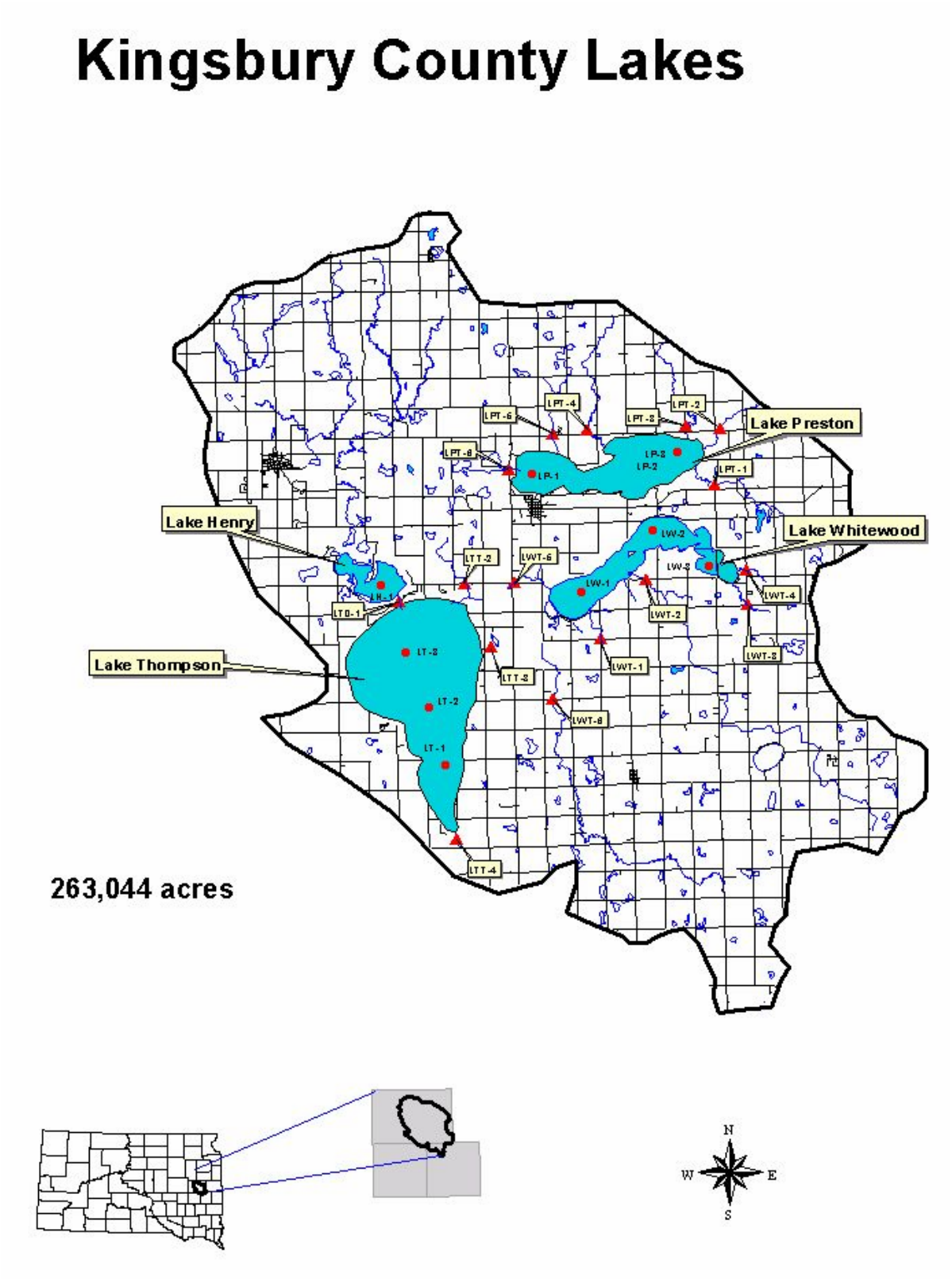


Figure 2. Location of proposed tributary (gray squares) and lake (gray circles) sampling sites for the Kingsbury County Lakes Assessment project.

TABLE 1. INLAKE PARAMETERS TO BE MEASURED:

Physical	Chemical	Biological
Air temperature	Total Alkalinity	Fecal Coliform Bacteria
Water temperature	Field pH	E. coli
Secchi Transparency	Dissolved Oxygen	Chlorophyll a
Depth	Total solids	Macrophyte Survey
Shoreline Survey/Macophytes	Total Suspended Solids	Benthic Invertebrates
Basin Morphometry	Total Dissolved Solids	
	Ammonia-N	
	Un-ionized Ammonia	
	Nitrate + Nitrite-N	
	TKN	
	Total Phosphorus	
	Total Dissolved Phosphorus	
	Conductivity	
	Turbidity	

C. OUTPUTS:
Estimated 84 samples collected
In-lake water quality report.
Statistical evaluation of water quality and biological data for each lake basin.
Calculations of Carlson Trophic State Index.
Dissolved oxygen and temperature profiles.
Model estimates nutrient loading and trophic state based upon collected field data.

D. BUDGET:

LINE ITEMS	NON-FEDERAL		FEDERAL
	CASH	IN-KIND	
Project Coordinator	$ -	$ 140.00	$ -
Grad Students	$ -	$ -	$ 31,472.15
SDSU Technician	$ 4,500.00	$ -	$ 4,666.00
Conservation District	$ -	$ 750.00	$ -
Travel	$ -	$ -	$ 2,668.00
Contracted Lab Analyses	$ -	$ -	$ 16,467.71
Supplies and Shipping	$ 7,250.00	$ -	$ 6,663.00
Equipment	$ 2,040.00	$ -	$ 24,389.85
Total	$ 9,290	$ 8,90.00	$ 86,326.71

RESPONSIBLE AGENCIES:

Task Responsibilities:

South Dakota State University

Design and Technical Assistance:

South Dakota Department of Environment and Natural Resources

OBJECTIVE 2: Estimate sediment and nutrient loadings from inlet streams to Lakes Thomspon, Preston and Whitewood using monitoring data and the USACE Flux model. This

information will be used to locate critical areas in the watershed to be targeted for implementation.

TASK 4 Install water level recorders on tributary monitoring sites and maintain a continuous stage record for the project period, with the exception of winter months after freeze up.

TASK 5 Discrete discharge measurements will be taken on a regular schedule and during storm surges. Discharge measurements will be taken with a hand held current velocity meter.

TASK 6 Discharge measurements and water level data will be used to calculate a hydrologic budget for the creek system. This information will be used with concentrations of sediment and nutrients to calculate loadings from the watershed.

TASK 7 Collect water quality samples from 16 tributary monitoring sites. Samples will be collected during spring runoff, storm events, and monthly base flows. Proposed water quality monitoring sites may be found in Figure 2.

TABLE 2. PARAMETERS MEASURED FOR TRIBUTARY SAMPLES:

Physical	Chemical	Biological
Air temperature	Total solids	Fecal Coliform Bacteria
Water temperature	Total Suspended Solids	E. Coli
Discharge	Dissolved Oxygen	Riparian Assessment
Depth	Ammonia	Benthic Macroinvertebrates
Visual observations	Un-ionized Ammonia	
Water level	Nitrate + Nitrite	
Substrate Assessment	TKN	
	Total Phosphate	
	Total Dissolved Phosphate	
	Field pH	

TASK 8 Samples will be collected weekly during spring snowmelt runoff and once during each of six storm runoff events during the growing season of each year. Baseflow sampling will occur once monthly over the period April through September of 2001, 2002. We anticipate collection of 532 samples from stream sites throughout the project period. Nutrient loadings to each basin will be estimated using the USACE Flux model.

LINE ITEMS	NON-FEDERAL		FEDERAL
	CASH	IN-KIND	
Project Coordinator	$ -	$ 534.00	$ -
Grad Students	$ -	$ -	$ 31,471.15
SDSU Technician	$ 4,500.00	$ -	$ 4,667.00
Conservation District	$ -	$ 1,000	$ -
Travel	$ -	$ -	$ 7,260.80
Contracted Lab Analyses	$ -	$ -	$ 61,901.00
Supplies and Shipping	$ 7,250.00	$ -	$ 7,512.50
Equipment	$ 2,045.00	$ -	$ 1,750.00
Total	$ 9,295.00	$ 1,534.00	$ 114,562.45

QUALITY ASSURANCE/QUALITY CONTROL:

Approved QA/QC procedures will be utilized on all sampling and field data collection on the Kingsbury County Lakes Assessment Project. Please refer to the South Dakota Nonpoint Source Program Quality Assurance Project Plan for the details of the procedures to be followed.

PRODUCTS:

A lake basin and tributary water quality report will be presented which includes a description of relationships between physical, chemical and biological data. Hydrologic and nutrient loads will be calculated for each lake basin. This section will be part of the final project report.

RESPONSIBLE AGENCIES:

Task Responsibilities:

South Dakota State University

Design and Technical Assistance:

South Dakota Department of Environment and Natural Resources

WORK ACTIVITIES:

Water grab samples will be collected from mid-channel and 60% of total depth. All samples will be preserved, packed in iced and shipped to the lab for analysis. Nutrient and solids parameters will be sampled from 16 tributary sites in the project area. Channel and riparian zone habitat conditions will be evaluated from each tributary location. Benthic macroinvertebrates will be sampled using a D-Frame kicknet from three locations at each site (composite sample). Nutrient analyses will be conducted by the South Dakota State University Water Quality Testing Laboratory. Fecal coliform samples will be analyzed by the South Dakota Department of Health Laboratory in Pierre, SD. All other analyses will be conducted by the Environmental Biology Laboratory at South Dakota State University. Tributary assessment data will be integrated together with hydrologic loading to provide a complete watershed analysis for the project area.

OBJECTIVE 3: Ensure that all water quality samples are accurate and defendable through the use of approved Quality Assurance/Quality Control procedures.

TASK 9 The collection of all field water quality data will be accomplished in accordance with the Standard Operating Procedures for Field Samplers, South Dakota Water Resource Assistance Program.

TASK 10 A minimum of 10 percent of all the water quality samples collected will be QA/QC samples. QA/QC samples will consist of field blanks and field duplicate samples. An estimated 75 samples will be collected during the project.

TASK 11 All QA/QC activities will be conducted in accordance with the South Dakota Nonpoint Source Program Quality Assurance Project Plan.

TASK 12 The activities involved with QA/QC procedures and the results of QA/QC monitoring will be compiled and reported on in a section of the final project report.

LINE ITEMS	NON-FEDERAL		FEDERAL
	CASH	IN-KIND	
Project Coordinator	$ -	$ 1,284.00	$ -
Grad Students	$ -	$ -	$ 6,863.70
SDSU Technician	$ 1,000.00	$ -	$ 1167.00

Conservation District	$ -	$ 250.00	$ -
Travel	$ -	$ -	$ 792.00
Contracted Lab Analyses	$ -	$ -	$ 8,707.64
Supplies and Shipping	$ -	$ -	$ 1,575.00
Total	$ 1,000.00	$ 1,534.00	$ 19,105.34

PRODUCTS:

A Quality Assurance/Quality Control monitoring report as part of the final report.

RESPONSIBLE AGENCIES:

Task Responsibilities:

South Dakota State University

Design and Technical Assistance:

South Dakota Department of Environment and Natural Resources

WORK ACTIVITIES:

Approved QA/QC will be utilized on all sampling and field data collected during the Kingsbury County Lakes project. Please refer to the South Dakota Water Resource Assistance Program Quality Assurance Plan and the South Dakota Water Resource Assistance Program Standard Operating Procedures for Field Samplers for details of the procedures to be followed.

OBJECTIVE 4: Evaluation of agricultural impacts to the water quality of the watershed through the use of the Agricultural Nonpoint Source (AGNPS) model.

TASK 13 Local Coordinators will collect the AGNPS data to model the watershed in the Lake Thompson, Preston and Whitewood watershed. AGNPS is a comprehensive land use model which estimates soil loss and delivery and evaluates the impacts of livestock feeding areas. The watershed will be divided into 40 acre cells. Each cell will be analyzed by using 21 separate parameters with additional information collected for animal feeding operations.

TASK 14 This model will be used to identify critical areas of nonpoint source pollution to the surface waters in the watershed. Contributors of nutrients and sediments to surface water in the Lake Thompson, Preston and Whitewood watersheds will be identified.

LINE ITEMS	NON-FEDERAL		FEDERAL
	CASH	IN-KIND	
AGPNS Coordinator	$ 67,500.00	$ -	$ -
Conservation District	$ -	$ 7,000.00	$ -
Supplies and Shipping	$ 2,000.00	$ -	$ -
AGNPS Model	$ 6,000.00	$ -	$ -
Total	$ 75,500.00	$ 7,000.00	$ -

PRODUCTS:

Report on land use in the watershed.
Recommendations for remediation of pollution sources in the watershed.

RESPONSIBLE AGENCIES:

Task Responsibilities:

Kingsbury County Conservation District

Design and Technical Assistance:

South Dakota Department of Environment and Natural Resources

OBJECTIVE 5: Public participation and involvement will be provided for and encouraged.

TASK 15 Informational meetings will be held on a quarterly basis for the general public and to inform the involved parties of progress on the study. These meetings will provide an avenue for input from the residents in the area.

TASK 16 News releases will be prepared and released to local news media on a quarterly basis. These releases will be provided to local newspapers, radio stations and TV stations.

LINE ITEMS	NON-FEDERAL		FEDERAL
	CASH	IN-KIND	
AGPNS Coordinator	$ 1,322.00	$ -	$ -
Conservation District	$ -	$ 1,644.00	$ -
Travel	$ -	$ -	$ 720.00
Public Meetings/News Releases	$ 500.00	$ -	$ -
Total	$ 1,822.00	$ 1,644.00	$ 720.00

PRODUCTS:

Public input to the project.
Quarterly public meetings and two local press releases will provide information about the project.
The local sponsor will document involvement and/or input from the public.

RESPONSIBLE AGENCIES:

Task Responsibilities:

Kingsbury County Conservation District

Design and Technical Assistance:

South Dakota Department of Environment and Natural Resources

WORK ACTIVITIES:

Informational meetings will be held on a frequent basis for the general public to inform the involved parties of progress on the study and provide a means of public input.

OBJECTIVE 6: Development of watershed restoration recommendations.

TASK 17 Once the field data is collected, an extensive review of the historical and project data will be conducted.

TASK 18 Loading calculations based on project data will be done and a hydrologic, sediment and nutrient budget for each lake basin will be developed.

TASK 19 The results of the AGNPS modeling will be used in conjunction with the water quality and hydrologic budget to determine critical areas in the watersheds.

TASK 20 Feasible management practices will be compiled into a list of recommendations for the development of an implementation project and included in the final project report.

LINE ITEMS	NON-FEDERAL		FEDERAL
	CASH	IN-KIND	
Project Coordinator	$ -	$ 1,644.00	$ -
AGNPS Coordinator	$ 1,322.00	$ -	$ -
Total	$ 1,322.00	$ 1,644.00	$ -

PRODUCTS:

A list of viable watershed restoration recommendations and recommendations for the watersheds of Lakes Thompson, Preston and Whitewood will be developed.

RESPONSIBLE AGENCIES:

Task Responsibilities:

South Dakota State University
Kingsbury County Conservation District

Design and Technical Assistance:

South Dakota Department of Environment and Natural Resources
Natural Resources Conservation Service

WORK ACTIVITIES:

An extensive review and study of the historical and current data will be done to determine the best management practices and hydrologic restoration techniques needed to improve water quality and sediment transport into Lakes Thompson, Preston and Whitewood.

OBJECTIVE 7: Produce and publish a final report containing water quality results and restoration recommendations. The format will follow the recently approved 319 final project format including but not limited to financial data and task completion information. The final report will also include an appendix which will have the TMDL summary information.

TASK 21: Produce loading calculations based on water quality sampling and hydrologic measurements.

TASK 22 Summarize the results of the AGNPS model for the watershed and report locations of critical areas.

TASK 23 Write a summary of historical water quality and land use information and compare with project data to determine any possible trends.

TASK 24 Based on data, evaluate the hydrology of the Lakes Thompson, Preston and Whitewood and the chemical, biological, and physical condition of inlet and outlet streams.

TASK 25 Produce a summary report of all QA/QC activities conducted during the project and include in the final project report.

TASK 26 Write a description of feasible restoration recommendations for use in planning watershed nonpoint source implementation.

LINE ITEMS	NON-FEDERAL		FEDERAL
	CASH	IN-KIND	
Project Coordinator	$ -	$ 8,670.00	$ -
Travel	$ -	$ -	$ 720.00
Total	$ -	$ 8,670.00	$ 720.00

PRODUCTS:

A final Report incorporating all previously described objectives

RESPONSIBLE AGENCIES:

South Dakota State University

WORK ACTIVITIES:

Statistical evaluation of all water quality and field data produced during the course of the study. Review and compilation of historical data will be completed. Restoration recommendations will be developed. Graphic presentations of the information will be produced.

3.3 MILESTONE TABLE - see attached milestone.

3.4 Biological sampling permits will be acquired from South Dakota Game, Fish and Parks. No additional special permits are required to do this assessment project.

3.5 The Kingsbury County Conservation District will serve as lead project sponsor for this project. Conservation district boundaries encompass almost all of the involved watershed area. In addition, conservation district personnel are in direct contact with watershed landowners. The main problems within the project area appear to be sediment and nutrient loadings leading to cultural eutrophication.

4.0 COORDINATION PLAN

4.1 The following groups/agencies have agreed through an informal agreement to cooperate in the Kingsbury County Lakes Assessment project.

Kingsbury County Conservation District - local sponsor and technical assistance

South Dakota State University - local project coordinator and technical assistance

South Dakota Association of Conservation Districts – local support and technical assistance

East Dakota Water Development District - local support and equipment provider

South Dakota Conservation Commission – support and technical assistance

US Natural Resource Conservation Service – support and technical assistance.

US Environmental Protection Agency –support and technical assistance

South Dakota Department of Environment and Natural Resources - technical assistance

4.2 In March of 2000 a correspondence requesting assistance was received from the South Dakota Department of Environment and Natural Resources requesting development of an EPA 319 Assessment Proposal for the Kingsbury County Lakes Project.

4.3 Letters of support have been requested from local organizations to SDSU supporting the Kingsbury County Lakes Assessment Project.

4.4 This project will coordinate activities between university, state, federal, and local government agencies through informal contacts and public meetings. Input and involvement in this assessment has been requested from SD Game, Fish, and Parks, NRCS, local organizations, and local government agencies.

4.5 This project is intended to work with and cooperate with the Kingsbury County Conservation District in efforts to assess Lakes Thompson, Preston and Whitewood watershed.

5.0 EVALUATION AND MONITORING PLAN

5.1 The monitoring strategy is explained in section 3. The project will produce bi-annual progress reports. The sampling and analysis procedures required to complete the tasks within section 3 can be located in the Standard Operating Procedures for Field Samplers for the South Dakota Water Resource Assistance Program (SOP). The specific locations of these sampling methods within the SOP as they pertain to each task are documented in Table 3 on the following page.

5.2 This assessment project consists of a combination of chemical, hydrologic, land use and biological analyses. Monitoring sites will be maintained and sampled within Lakes Thompson, Preston and Whitewood and associated inlet/outlet tributaries. Ambient samples will be collected along with spring runoff and storm events. Stream discharge will be routinely measured. The chemical, physical, and biological parameters to be sampled during this project can be located in Table 1 (page 7) and Table 2 (page 10). Loads will be calculated based on the samples and data collected with the approved methods identified in section 5.1. A TMDL report will be produced for lakes Thompson, Preston and Whitewood.

5.3 All water quality monitoring will be done in accordance with the approved South Dakota Nonpoint Source Program Quality Assurance/Quality Control Project Plan and the Standard Operating Procedures for Field Samplers for the South Dakota Water Resource Assistance Program.

5.4 Results from all water quality monitoring efforts under the Kingsbury County Lakes Project will be reported in the final project report. Data will be managed by the South Dakota Department of Environment and Natural Resources and maintained in a computer database. South Dakota DENR will enter all sample data into the US EPA STORET Program. This data will be used as the foundation of a Section 319 Watershed Implementation Project proposal.

6.0 BUDGET

See attached budget page.

7.0 PUBLIC INVOLVEMENT

See Objective 5.

TABLE 3. Analysis Procedures for each applicable task for the Kingsbury County Lakes Assessment Project.

TASK NUMBER	TASK DESCRIPTION	ACTIVITY	REFERENCE IN SDWRA-1999 SOP
Task 1	Inlake Surface and Bottom Sampling at 3 inlake sites on each lake for Nutrient and Solids Parameters (Table 1).	Inlake Sampling	Section 7.0 pges 4-11 Section 7.0 pges 1-12
Task 2	Water Column dissolved oxygen and temperature profiles. Fecal coliform, algal, chlorophyll *a,* and benthic invertebrate sampling will also be conducted.	D.O. and Temp. Profiles. Fecal, Chl-*a,* Algae and invertebrate sampling	Section 7.0 pg 5 Section 7.1 pg 10 Section 7.0 pg 12 Section 7.5 pg 1 Section 15 pgs 1-13
Task 3	All inlake samples collected using the methods described in the SOP for field samplers by the State of South Dakota Water Resources Assistance Program	Inlake Sampling	Section 7.0 pges 4-11 Section 7.0 pges 1-12
Task 5	Discrete discharge measurements will be taken on a regular schedule and during storm surges.	Flow (Marsh-McBirney)	Section 7.1 pges 5-9
Task 7	Collect water quality samples from 16 tributary monitoring sites. Table 2 shows the parameters to be measured.	Tributary Sampling Procedures	Section 7.1 pges 1-18
Task 8	Sampling weekly during snowmelt and during storm events. Base flows will be sampled monthly throughout the period April 1 to September 30 for an estimated total number of 532 samples. Riparian assessment and macroinvertebrate sampling will be conducted.	Tributary Sampling Procedures	Section 7.1 pges 1-18 Section 15 pgs 1-13 Section 16 pgs 1-14
Task 9	The collection of all field water quality data will be accomplished in accordance with the Standard Operating Procedures for Field Samplers, South Dakota Water Resource Assistance Program.	Quality Assurance	Section 10.0 pges 1-3
Task 10	A minimum of 10 percent of all the water quality samples collected will be QA/QC samples. QA/QC samples will consist of field blanks and field duplicate samples. An estimated 75 samples will be collected during the project.	Quality Assurance	Section 10.0 pges 1-3
Task 11	All QA/QC activities will be conducted in accordance with the Water Resources Assistance Program Quality Assurance Project Plan.	Quality Assurance	Section 10.0 pges 1-3
Task 12	The activities involved with QA/QC procedures and the results of QA/QC monitoring will be compiled and reported in a section of the final project report and in all project reports.	Quality Assurance	Section 10.0 pges 1-7
Task 13	Use of the AGNPS computer model	Watershed Modeling	Section 17.0 pg 1

KINGSBURY COUNTY LAKES ASSESSMENT PROJECT BUDGET				
	2001	**2002**	**2003**	**TOTAL**
EPA Section 319	$75,152.99	$103,884.83	$71,441.80	$250,479.62
Other Federal	Not Applicable in this Project			
State Match	$40,054.00	$40,054.00	$22,536.00	$102,644.00
Local Match	$25,700.00	$23,769.00	$14,649.74	$64,118.74
Total Budget	**$140,906.99**	**$167,707.83**	**$108,627.54**	**$417,242.36**

*INCLUDES MULTIPLE COMMUNITY ORGANIZATIONS AND AGENCIES

Kingsbury County Lakes Assessment Project
South Dakota State University
Proposed Budget

Line Item	Total Budget	Federal	Non-Federal	Federal EPA-319	State DENR	Local & SDSU Cash	Local & SDSU In-kind
Project Coordinator	$12,272.00	$ -	$12,272.00	$ -	$ -	$ -	$12,272.00
Graduate Assistants	$69,807.00	$69,807.00	$ -	$69,807.00	$ -	$ -	$ -
SDSU Support Technicians	$20,500.00	$10,500.00	$10,000.00	$10,500.00	$10,000.00	$ -	$ -
AGNPS Personnel	$70,144.00	$ -	$70,144.00	$ -	$70,144.00	$ -	$ -
Conservation District	$10,644.00	$ -	$10,644.00	$ -	$ -	$ -	$10,644.00
Contracted Lab Analyses[1]	$87,076.35	$87,076.35	$ -	$87,076.35	$ -	$ -	$ -
Watershed Modeling	$6,000.00	$ -	$6,000.00	$ -	$6,000.00	$ -	$ -
Equipment	$30,224.85	$26,139.85	$4,085.00	$26,139.85	$ -	$4,085.00	$ -
Travel	$12,160.00	$12,160.00	$ -	$12,160.00	$ -	$ -	$ -
Supplies	$31,250.00	$14,250.00	$17,000.00	$14,250.00	$16,500.00	$500.00	$ -
Shipping	$1,500.00	$1,500.00	$ -	$1,500.00	$ -	$ -	$ -
Subtotal	$351,578.20	$221,433.20	$130,145.00	$221,433.20	$102,644.00	$4,585.00	$22,916.00
Indirect Costs	$65,664.16	$29,046.42	$36,617.74	$29,046.42	$ -	$36,617.74	$ -
Total	$417,242.36	$250,479.62	$166,762.74	$250,479.62	$102,644.00	$41,202.74	$22,916.00

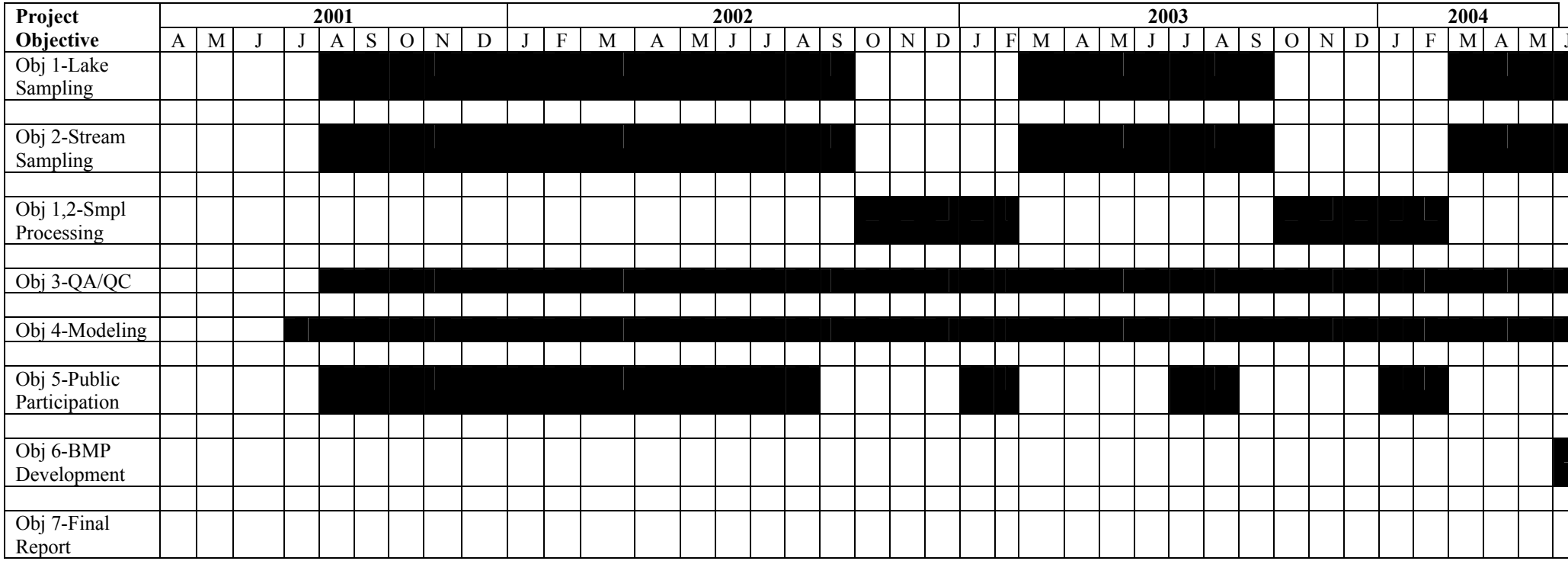
[1]Contracted lab analyses include lake and stream nutrient analyses subcontracted to the SDSU Water Quality Lab and fecal coliform analyses subcontracted to the State Department of Health Laboratory in Pierre.

Needed Equipment:

Equipment List	Disposition	Purchase Value	Matching Amount[1,2]
Lap Top Computer	Project purchase for use on project.	$3500.00	$0.00
Stage Recorders 16 @ $2000	Provided by SD DENR (outside proposed budget).	$32000.00	$0.00
Zoom Dissecting Microscope	SDSU purchase for use on project.	$7000.00	$1685.00
Boat, Motor and Trailer	EPA 319 federal	$26,139.85.00	$0.00
Total		**$54500.00**	**$1685.00**

[1]Matching dollars for the zoom dissecting scope were determined based upon total number of samples collected and average processing time per sample (312 samples x 6 hours/sample x $0.90/hour = $1,685.00).
[2]Matching dollars for boat, motor and trailer were determined based upon a rental rate of $100/day (24 days lake sampling time x $100/day = $2,400.00).

Kingsbury County Lakes Assessment Project
South Dakota State University
Milestone Chart
2001-2004



SOUTH DAKOTA NONPOINT SOURCE PROGRAM
QUALITY ASSURANCE PROJECT PLAN

SUBMITTED BY:

SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF FINANCIAL AND TECHNICAL ASSISTANCE
WATER RESOURCES ASSISTANCE PROGRAM

Prepared by: Robert Smith
February 2001

Project Title: Kingsbury County Lakes Assessment Project

APPROVED BY:

_____	_____
South Dakota Watershed Protection Program Environmental Senior Scientist, Assessment Section	Date
_____	_____
South Dakota Watershed Protection Program Project Officer	Date
_____	_____
South Dakota Watershed Protection Program Quality Assurance Coordinator	Date